AMENDMENTS TO THE CLAIMS

Please amend claims 1-3, 8, 10, 11, 19-22, and 28; cancel claims 6, 7, 9, 12-15, 17, 24-26, 29-32, 34, and 35; and add claims 38-42, such that the status of the claims is as follows:

1. (Currently Amended) A method for making a three-dimensional object comprising the steps of:

> building an object from a polymeric or wax modeling material using a layered manufacturing rapid prototyping technique, wherein the built object has an object surface formed of the modeling material; and
>
> smoothing an object surface by exposing the object to vapors of a solvent that transiently softens the modeling material at the object surface; and.
>
> reflowing the softened modeling material to smooth the object surface.

2. (Currently Amended) The method of claim 1, wherein the layered manufacturing technique comprises is fused deposition modeling.

3. (Currently Amended) The method of claim 1, where the modeling material comprises is a thermoplastic resin.

4. (Original) The method of claim 3, wherein the thermoplastic resin comprises at least about 50 weight percent of an amorphous thermoplastic selected from the group consisting of ABS, polycarbonate, polyphenylsulfone, polysulfone, polystyrene, polyphenylene ether, amorphous polyamides, acrylics, poly(2-ethyl-2-oxazoline), and blends thereof.

5. (Original) The method of claim 4, wherein the solvent is selected from the group consisting of methylene chloride, an n-Propyl bromide solution, perchloroethylene, trichloroethylene, and a hydrofluorocarbon fluid.

6. (Canceled)

7. (Canceled)

8. (Currently Amended) The method of claim 1, and further comprising the step of:

    selecting a length of time during which the object is to be exposed to the solvent vapors as a function of concentration of the solvent vapors, prior to the <u>exposing</u> ~~smoothing~~ step.

9. (Canceled)

10. (Currently Amended) The method of claim 1, and further comprising the step of:

    masking selected portions of the object surface with a substance that will inhibit smoothing of the selected portions, prior to the step of <u>exposing</u> ~~smoothing~~ the object ~~surface~~ <u>to the vapors of the solvent</u>.

11. (Currently Amended) The method of claim 10, wherein the masking substance is applied using an automatic process <u>selected from the group consisting of a jetting process and a fused deposition modeling process</u>.

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Original) The method of claim 11, and further comprising the step of:

    identifying the selected portions of the object surface using a software algorithm that creates a digital representation of the surface area to be protected.

17. (Canceled)

18. (Original) The method of claim 1, and further comprising the step of:

    creating a digital mask of selected portions of the object surface for which smoothing is not desired, using a haptic input interface.

19. (Currently Amended) The method of claim 1, wherein the building step comprises pre-distorting certain object features so that said features will obtain a desired geometry following the <u>exposing</u> ~~smoothing~~ step.

20. (Currently Amended) The method of claim 19, and further comprising the steps of:

    providing an initial object representation in a digital format, the initial object representation having a surface geometry; and

    modifying the initial object representation to pre-distort certain features of the surface geometry, producing a modified object representation;

    wherein the object built in the building step has a geometry defined according to the modified object representation; and

    wherein the desired geometry attained following the <u>exposing</u> ~~smoothing~~ step approximately matches that of the initial object representation.

21. (Currently Amended) A method for ~~eliminating surface roughness of an~~ <u>making a three-dimensional</u> object ~~built from a modeling material using a layered manufacturing rapid prototyping technique,~~ comprising the <u>steps</u> ~~step~~ of:

    <u>forming a plurality of layers with a modeling material using a layered manufacturing rapid prototyping technique to build an object having an</u>

object surface, wherein the plurality of layers create a surface effect at the object surface, the surface effect being selected from the group consisting of a stair step effect, a roughness, and a combination thereof;

~~reflowing a surface of the object by~~ exposing the object to vapors of a solvent that transiently softens the modeling material at the object surface; and reflowing the softened modeling material to reduce the surface effect at the object surface.

22. (Currently Amended) The method of claim 21, where the modeling material comprises ~~is~~ a thermoplastic resin.

23. (Original) The method of claim 22, wherein the thermoplastic resin comprises at least about 50 weight percent of an amorphous thermoplastic selected from the group consisting of ABS, polycarbonate, polyphenylsulfone, polysulfone, polystyrene, polyphenylene ether, amorphous polyamide, methyl methacrylate, poly(2-ethyl-2-oxazoline), and blends thereof.

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Original) The method of claim 21, and further comprising the step of:
    masking selected portions of the object surface with a substance that will inhibit smoothing of the selected portions, prior to the step of reflowing the surface.

28. (Currently Amended) The method of claim 27, wherein the masking substance is applied using an automatic process selected from the group consisting of a jetting process and a fused deposition modeling process.

29. (Canceled)

30. (Canceled)

31. (Canceled)

32. (Canceled)

33. (Original) The method of claim 28, and further comprising the step of:
> identifying the selected portions of the object surface using a software algorithm that creates a digital representation of the surface area to be protected.

34. (Canceled)

35. (Canceled)

36. (Original) A method for making a three-dimensional object comprising the steps of:
> providing an initial object representation in a digital format, the initial object representation having a surface geometry;
>
> modifying the initial object representation to pre-distort certain features of the surface geometry, producing a modified object representation;
>
> building an object as defined by the modified object representation, from a modeling material using a layered manufacturing technique; and
>
> vapor smoothing surfaces of the object to produce a finished object, the finished object having a surface geometry that approximately matches

that of the initial object representation.

37. (Original) The method of claim 36, and further comprising the step of:

identifying features of the surface geometry for pre-distortion according to their radii of curvature.

38. (New)   The method of claim 36, wherein the layered manufacturing technique comprises fused deposition modeling.

39. (New)   The method of claim 36, where the modeling material comprises a thermoplastic resin.

40. (New)   The method of claim 39, wherein the thermoplastic resin comprises at least about 50 weight percent of an amorphous thermoplastic selected from the group consisting of ABS, polycarbonate, polyphenylsulfone, polysulfone, polystyrene, polyphenylene ether, amorphous polyamides, acrylics, poly(2-ethyl-2-oxazoline), and blends thereof.

41. (New)   The method of claim 36, wherein the vapor smoothing is performed with a solvent selected from the group consisting of methylene chloride, an n-Propyl bromide solution, perchloroethylene, trichloroethylene, and a hydrofluorocarbon fluid.

42. (New)   The method of claim 1, and further comprising the step of:

masking selected portions of the object surfaces with a substance that will inhibit smoothing of the selected portions, prior to the vapor smoothing step.